

Application Number 09/658,356
Amendment dated August 19, 2003
Reply to Office Action dated May 19, 2003

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (canceled).

Claim ¹/₂ (currently amended): A method of performing measurements on at least a portion of a liquid sample in a clinical analyzer, comprising the steps of:

- 3
- (a) providing a clinical analyzer with sample handling apparatus having one or more sample containers holding an amount of sample liquid; with sample metering apparatus having a proboscis, one or more metering tips having a tubular shape with a metering aperture at one end, a metering pump coupled with the proboscis; and sample processing apparatus having one or more test elements;
 - (b) attaching a tip to the proboscis to create a metering assembly;
 - (c) moving the metering assembly to an initial aspiration position, in which the metering aperture of the tip is immersed in sample liquid;
 - (d) creating a partial vacuum with the metering pump, causing a selected volume of sample liquid to be aspirated from a sample container into the tip;
 - (e) moving the metering assembly to a dispensing position;
 - (f) creating a partial pressure with the metering pump, causing a portion of the sample liquid to be dispensed from the metering tip onto a test element;
- B

Application Number 09/658,356
Amendment dated August 19, 2003
Reply to Office Action dated May 19, 2003

(g) the sample processing apparatus then performing at least one clinical chemistry test and analysis;

(h) the metering assembly moving to a tip ejection position;

(i) sealing the metering aperture of the metering tip;

(j) removing the metering tip from the proboscis;

(~~[[j]]~~ k) performing a sample quality measurement on the sample liquid in the ejected tip;

wherein said steps (b)-(~~[[h]]~~ g) are repeated in a primary analyzer cycle; wherein said steps step ~~[[h)-(j)]]~~ (k) ~~is~~ are repeated in a secondary sample quality cycle; such that at least portions of the primary and secondary cycles occur simultaneously.

Claim ~~3~~ (original): The method of Claim ~~2~~, wherein the test elements are thin film slides.

Claim ~~4~~ (original): The method of Claim ~~2~~, wherein the step of performing a sample quality measurement includes performing at least one additional test that is also conducted during said step of performing clinical chemistry tests, further comprising the additional step of:

comparing the results of the tests, and using the comparison to calibrate the analyzer.

Claim ~~5~~ (original): The method of Claim ~~2~~, wherein the sample quality measurement is performed by a spectrophotometer.

Application Number 09/658,356
Amendment dated August 19, 2003
Reply to Office Action dated May 19, 2003

Claim ⁵/₆ (original): A method of performing measurements on at least a portion of a liquid sample in a clinical analyzer, comprising the steps of:

(a) providing a clinical analyzer with sample handling apparatus having one or more sample containers holding an amount of sample liquid; with sample metering apparatus having a proboscis, one or more metering tips having a tubular shape with a metering aperture at one end, a metering pump coupled with the proboscis; and sample processing apparatus having one or more test elements;

(b) attaching a tip to the proboscis to create a metering assembly;

(c) moving the metering assembly to an initial aspiration position, in which the metering aperture of the tip is immersed in sample liquid;

(d) creating a partial vacuum with the metering pump, causing a selected volume of sample liquid to be aspirated from a sample container into the tip;

(e) moving the metering assembly to a dispensing position;

(f) creating a partial pressure with the metering pump, causing a portion of the sample liquid to be dispensed from the metering tip onto a test element;

(g) the sample processing apparatus then performing at least one clinical chemistry test and analysis;

(h) sealing the metering aperture of the metering tip;

(i) the metering assembly moving to a tip ejection position;

(j) removing the metering tip from the proboscis;

(~~[[j]]~~ k) performing a spectrophotometric measurement on the sample liquid in the ejected tip;

Application Number 09/658,356
Amendment dated August 19, 2003
Reply to Office Action dated May 19, 2003

wherein said steps (b)-(~~[[h]]~~ g) are repeated in a primary analyzer cycle;
wherein said steps step ~~[[h)-(j)]]~~ (k) ~~is~~ are repeated in a secondary spectrophotometric cycle;
such that at least portions of the primary and secondary cycles occur simultaneously.

Claim 7 (canceled).

Claim ~~8~~ (original): The method of Claim ~~6~~, wherein the tips have a tubular body and a capillary tip, connected by a cone; such that the sample quality measurement is performed though the cone of the tip.

Claim ~~9~~ (original): The method of Claim ~~6~~, wherein at least some of said steps are conducted automatically by a computer.

Claim ~~10~~ (original): The method of Claim ~~6~~, wherein the sample quality measurement step includes measuring hemoglobin, lipids, bilirubin, and biliverdin.

Claim 11 (canceled)

Claim ~~12~~ (original): A method of performing measurements on at least a portion of a liquid sample in a clinical analyzer, comprising the steps of:

(a) providing a clinical analyzer with sample handling apparatus having one or more sample containers holding an amount of sample liquid; with sample metering apparatus having a proboscis, one or more metering tips having a tubular shape with a metering aperture at

Application Number 09/658,356
Amendment dated August 19, 2003
Reply to Office Action dated May 19, 2003

one end, a metering pump coupled with the proboscis; and sample processing apparatus having one or more test elements;

- B2
- (b) attaching a tip to the proboscis to create a metering assembly;
 - (c) moving the metering assembly to an initial aspiration position, in which the metering aperture of the tip is immersed in sample liquid;
 - (d) creating a partial vacuum with the metering pump, causing a selected volume of sample liquid to be aspirated from a sample container into the tip;
 - (e) moving the metering assembly to a dispensing position;
 - (f) creating a partial pressure with the metering pump, causing a portion of the sample liquid to be dispensed from the metering tip onto a test element;
 - (g) the sample processing apparatus then performing at least one clinical chemistry test and analysis;
 - (h) the metering assembly moving to a tip ejection position;
 - (i) sealing the metering aperture of the metering tip;
 - (j) removing the metering tip from the proboscis;
 - [[g)] (k) performing a sample quality measurement on the sample liquid in the ejected tip;
 - [[k)] (l) aspirating a selected auxiliary volume of sample liquid from the tip;

wherein said steps (b)-([[h]] g) are repeated in a primary analyzer cycle; wherein said steps [[(h)-(j)]] (k)-(l) are repeated in a secondary sample quality cycle; such that at least portions of the primary and secondary cycles occur simultaneously.

22

B

Application Number 09/658,356
Amendment dated August 19, 2003
Reply to Office Action dated May 19, 2003

9
Claim ~~10~~ (original): The method of Claim ~~12~~, further comprising the step of:

(l) passing the auxiliary volume of sample liquid to a wet chemistry analyzer system.

32
11
9
Claim ~~14~~ (original): The method of Claim ~~12~~, further comprising the steps of:

(l) passing the auxiliary volume of sample liquid to a diluter system;
(m) diluting the auxiliary volume of sample liquid to form a diluted liquid;
(n) passing the diluted liquid to the sample processing apparatus; and
(o) the sample processing apparatus then performing at least one clinical chemistry test and analysis on the diluted liquid.

Claim 15 (canceled).

Claim 16 (canceled).

Claim 17 (canceled).

9
Claim ~~18~~ (previously presented): The method of Claim ~~12~~, wherein ~~an end of the metering tip has an aperture, further comprising the step before said step (i) of removing the metering tip from the proboscis[[:]]~~ further comprises crimping and sealing an end of the metering tip.

13
Claim ~~19~~ (new): A method of performing measurements on at least a portion of a liquid sample in a clinical analyzer, comprising the steps of:

(a) providing a clinical analyzer with sample handling apparatus having one or more sample containers holding an amount of sample liquid; with sample metering apparatus having a proboscis, one or more metering tips having a tubular shape with a metering aperture at

Application Number 09/658,356
Amendment dated August 19, 2003
Reply to Office Action dated May 19, 2003

one end, a metering pump coupled with the proboscis; and sample processing apparatus having one or more test elements;

- (b) attaching a tip to the proboscis to create a metering assembly;
- (c) moving the metering assembly to an initial aspiration position, in which the metering aperture of the tip is immersed in sample liquid;
- (d) creating a partial vacuum with the metering pump, causing a selected volume of sample liquid to be aspirated from a sample container into the tip;
- (e) moving the metering assembly to a dispensing position;
- (f) creating a partial pressure with the metering pump, causing a portion of the sample liquid to be dispensed from the metering tip onto a test element;
- (g) the sample processing apparatus then performing at least one clinical chemistry test and analysis;
- (h) the metering assembly moving to a tip ejection position;
- (i) crimping and sealing the metering aperture of the metering tip;
- (j) removing the metering tip from the proboscis;
- (k) performing a sample quality measurement on the sample liquid in the ejected tip;
- (l) aspirating a selected auxiliary volume of sample liquid from the tip;

wherein said steps (b)-(g) are repeated in a primary analyzer cycle; wherein said step (k) is repeated in a secondary sample quality cycle; such that at least portions of the primary and secondary cycles occur simultaneously.